BLANKOM®

Professional Headend Solutions

Operating instructions

Headend Controller

Headend control unit with 8A power supply

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HCB x00

Part N°: 965x.0x

1. Safety and operating instructions

When assembling, starting-up and adjusting the modules, it is necessary to consider the system specific references in the manual instruction!

The modules may only be installed and started up by authorized technical personnel!

When assembling the modules into the receiving points, the adherence of the EMC regulations is to be secured!

The assembly and wiring have to be done without voltage!

All active modules may only be operated with the Headend Controller HCB x00 or Bus Extender BEB x00!

The main voltage and the operating voltage of the modules working by DC have to be in complience to the operating parameters described in the technical data.

With all work the defaults of the DIN EN 50083 have to be considered! Especially the safetyrelevant execution of the DIN EN 60728-11 [1] is necessary!

2. Device variants

HCB 200	9652.01 Headend control unit with 8A power supply (100 ... 240 V~ input)
HCB 300	9653.01 Headend control unit with 8A power supply (48 V– input)
HCB 300	9653.02 Headend control unit with 8A power supply (48 V– input)

3. General

The Headend Controller HCB x00 is a module of the head end system B-LINE, which can also be used in the head end system C-LINE/ C-LINE$^+$.
The B-LINE system is conceived as a complete system for middle sized distribution networks, the C-LINE/ C-LINE$^+$ for smaller distribution networks. All active modules are programmed via the central Headend Controller.
The individual modules will be addressed by the address switch at the Bus Extender (line) (BEB x00) and at the respective module (position).

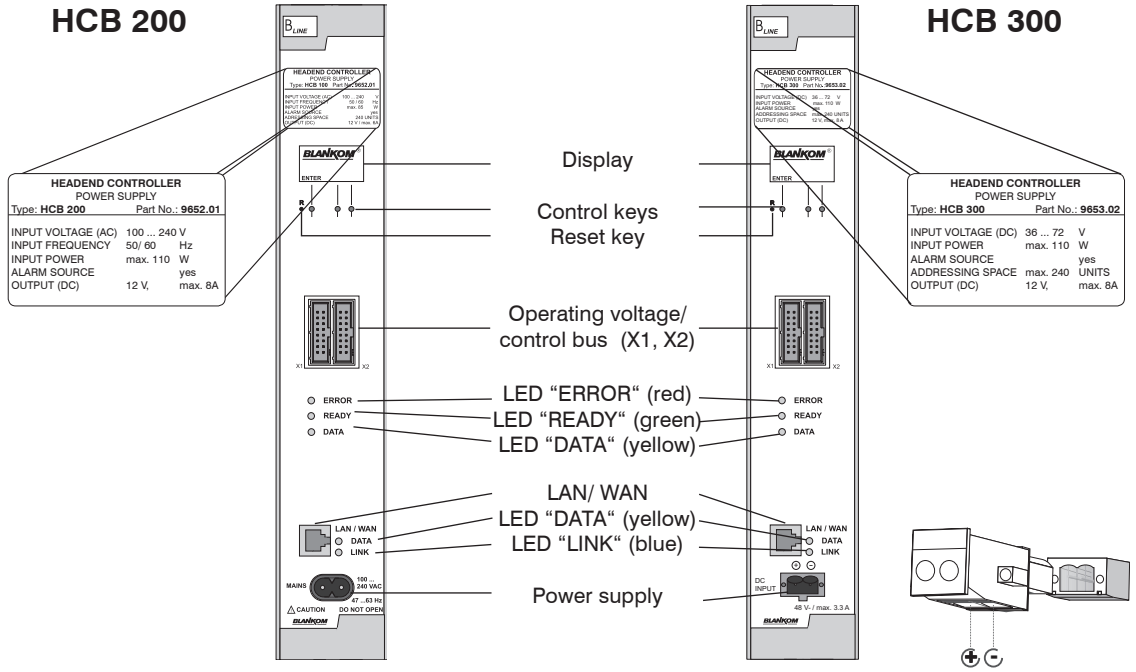
The status of the modules will be displayed by colored LEDs:

- Red - ERROR Control bus error
- Green - READY Operating status
- Yellow - DATA Data traffic at the internal control bus

RJ 45 socket:

- Yellow - DATA Data traffic (LAN/ WAN)
- Blue - LINK Connection

4. Front view



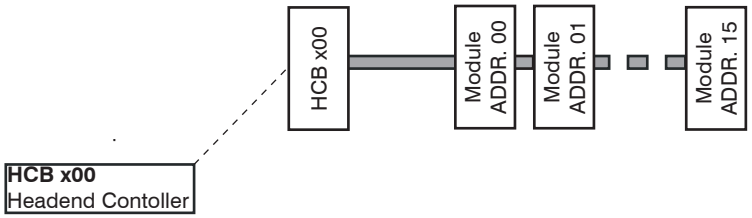
5. Functional description

The Headend Controller HCB x00 is the central control module of the head end or the individual switch cabinet. It consists the data interfaces to a PC/ LAN/ WAN and to the Bus Extender (BEB x00). The head end internal data bus has to be connected as seen in chapter 6 to 8 and the alarm function is descriped in chapter 9. Both bus connections X1 and X2 can be used for that. The data interface to a PC/ LAN/ WAN is implemented as a IP-/ Ethernet interface (RJ 45). Programming can be done but also directly at the control unit (see programming). By pressing the reset-key the HCB x00 reboots and all data of the head end are read out again.
The internal power unit supplies the control unit and in case of a Bus Extender (BEB x00) error it will switch automatically to the respective line. The Headend Controller HCB 200 and HCB 300 (9653.02) have an integrated current display, but the HCB 300 (9653.01) hasn‘t this function. It is recommended to use an individual control unit for every circuit (switch cabinet).
The IP address of each control unit can be edited and adapted to the respective LAN.

Additional information:	Redundancy circuit (Headend Controller)	(chapter 8)
	Structure (minimum configuration)	(chapter 6)
	Option: SNMP and DHCP	

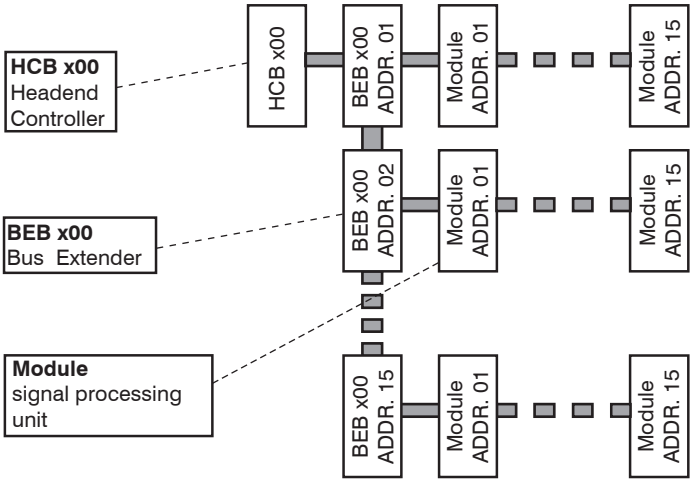
6. Head end bus structure

6.1 Minimum configuration (without Bus Extender)



The number of the possible module connections (00 ... 15) to a BEB x00 depends on the total power consumption of this line!

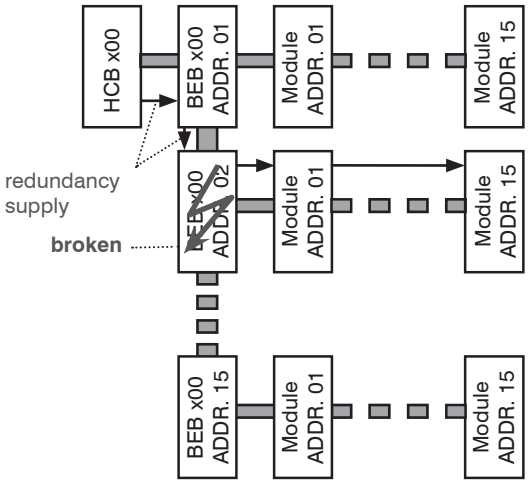
6.2 Standard configuration (with Bus Extender)



The number of the possible module connections (01 ... 15) to a BEB x00 depends on the total power consumption of this line!

7. Redundancy circuit

(Power supply redundancy)



Description of the power supply redundancy

With the redundant operation of a system, the control unit HCB x00 will automatically take over the function of the power supply, if the Bus Extender BEB x00 is failing .

8. Alarm function

To activate the alarm function is additional hardware 9651.01 or 9651.02 necessary!

The device is endorsed by an additional alarm function and current limitations, voltage drops and communication disturbaces. The contact 13 in the communication and supply bus is switched (+5V to 0 V) in case of alarm.

The alarm modules are available in 1 RU and in panel form. It is possible to insert the modules in any order into bus system. The signal is fed to a SUB-D 9 connector via relais in case of alarm. All the contacts are galvanically isolated. It is possible to trigger several kinds of alarm.

9. Technical data

Manual operation

Input	3 operating keys, reset key
Display	LCD, lit 19 x 28 mm

Remote control

Network connection (LAN/ WAN)	Ethernet, 10 Base T
Input connection	RJ 45

Address extent

Without Bus Extender	16 modules
With Bus Extender	240 modules (15 x 16)

Power supply HCB 200

Mains voltage	100 ... 240 V (+10%/ -5%)
Voltage frequency	47 Hz … 63 Hz
Mains connector	built in connector EN 60320-1/ C8 (IEC 320 C8) [3]
Internal device fuse	G 5 x 20, T4A (IEC 127 - 2/ V)
Power consumption	max. 110 W
Output DC voltage	12 V
Rippled noise ratio	66 dB
Current drain	max. 8 A**
Current limit	yes (9 A typical)
Short circuit protection	yes
Overvoltage protection	yes (≤ 14,5 V)*
Protective system	II acc.. DIN VDE 0860 [4]
Protection class	IP 20
Radio noise suppression	according DIN VDE 0871 (curve B) [5]
Temperature range	-10 … +55°C

Power supply HCB 300 (9653.01)

Input voltage	48 V DC (36 ... 72 V DC)
Input current (at 48 V)	2.4 A
Power consumption	max. 125 W
Overcurrent protection	fold back (at 110 ... 143% I_{OUT})
Overvoltage protection	16.8 ... 20 V
Max. current drain	8 A (-10 ... +43 °C)** 6 A (+55 °C)
Voltage stability	1500 V DC (input/ output)
Radio noise suppression	EN 55022 (CIS PR22) Class B [6] EN 61000-4-2,3,4,6,8 [7] / ENV 50204 [8]

Power supply HCB 300 (9653.02)

Input voltage	48 V DC (36 ... 72 V DC)
Input connection	Plug with screw termination, with polarity protection
Fuse	T 6.3 A/ 250 V "H" (5x20, internal")
Polarity reversal protection	yes
Power consumption	max. 110 W
Voltage stability AC	1500 V (input/ output)
Output DC voltage	12 V
Rippled noise ratio	66 dB
Output current	0.25 ... 8 A
Current limit	yes
Short circuit protection	yes, hicc-up mode
Overvoltage protection	yes (> 14.5 V)
Protection class	IP 20
Noise emission	EN 55011 [9], EN 55022 (CIS PR22) Class B [6], EN 50083-2 [2]
Immunity	EN 61000-6-1 [10]/ EN 61000-6-2 [11]
Temperature range	-10 … +60 °C

Environmental conditions

Relative humidity	≤ 80 % (non condensing)
Mounting method	vertical
Mounting location	splash-proof and drip-proof

Physical information

Dimensions (l x w x h)		
without 19"-adapter		50 x 276 x 148 mm
with 19"-adapter		50 x 301 x 148 mm
Weight	HCB 200, 300 (9653.02)	about 1,500 g
	HCB 300 (9653.01)	about 1,600 g

Delivery contents

1 x Power cord or connector
1 x Screw driver
2 x Wrenches
4 x Terminal resistance 75 Ω
2 x Multipole sockets

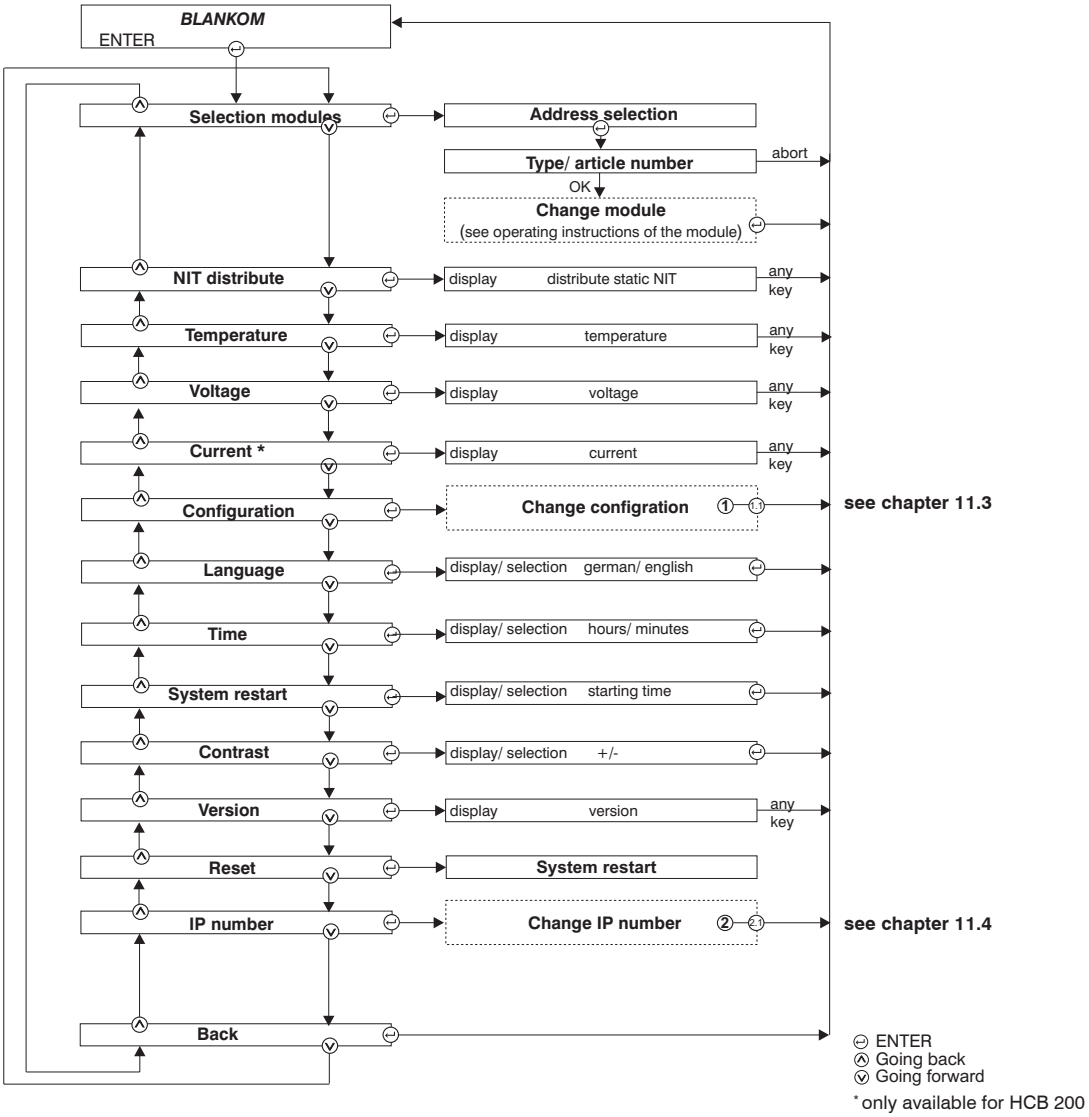
Software options

SNMP activation	CKB 100 (9650.50)

* to reset device 2 minutes without voltage!
** > 6 A only use bus cable "8 A" !

10. Programming

10.1 Main program



10.2 Adjustments

Manuel adjustment

- Adjustment of the addresses at the Bus Extender BEB x00 and at the modules
- Activation of the data input at the Headend Controller HCB x00 by pressing the “ENTER”-key
- Display/ adjustment of the parameter of the HCB x00 or a selected module as in chapter 11.1
- Activation of the programming modus of each module by selecting the line (BEB x00) and the module position (01 … 15) at the Headend Controller (HCB x00) → the yellow LED at the module will be lit up til the beginning of the parameter adjustment
- Adjustment of the parameter at the selected module according to the individual product description
- After the programming the data will be transmitted automatically to the modules → the yellow LED on the HCB x00 will be lit up during the data transfer process
- The green LED shows the operating status

Adjustment with the PC/ laptop

- An “online connection” after IP-standard and an ethernet connection at the PC/ laptop is necessary for the remote programming
- Adjustment of the line/ position addresses at the Bus Extender BEB x00 as well as at the modules
- At the HCB x00 IP-address input (e.g. 192.168.001.001)
- For “direct connection” between a PC and HCB x00 use a crossed patch cable (RJ 45)
- For connection over a deviation use an uncrossed patch cable
- HTML-browser start-up and IP-address as target address input
- If connected correctly the HTML control surface at the PC will open up and a blue LED (LINK) at the HCB x00 will be lit up
- All adjustments of the modules are specified at the control surface

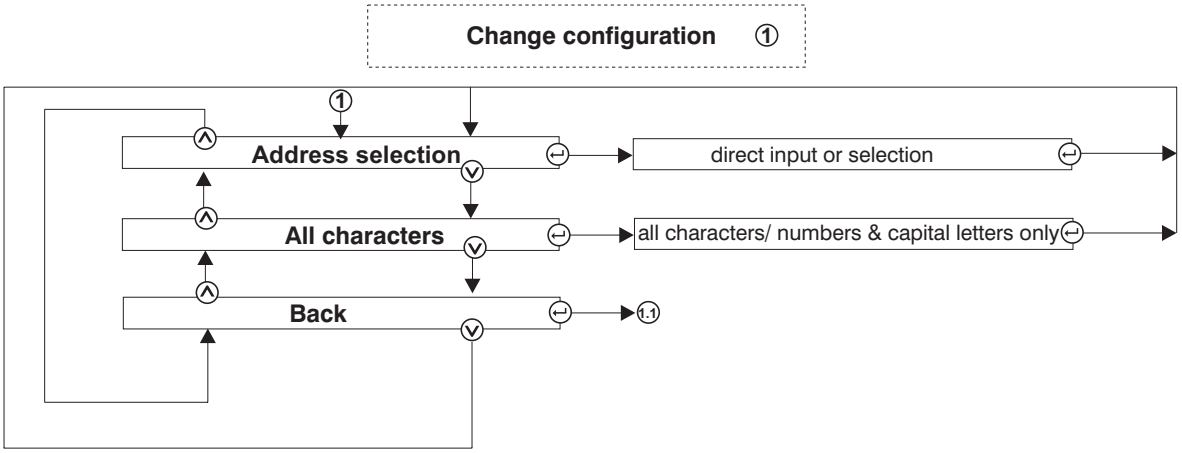
Adjustment of removal of write protection

- Removal of write protection by input of “0000” (password) and “0000” (user)

Default IP Address

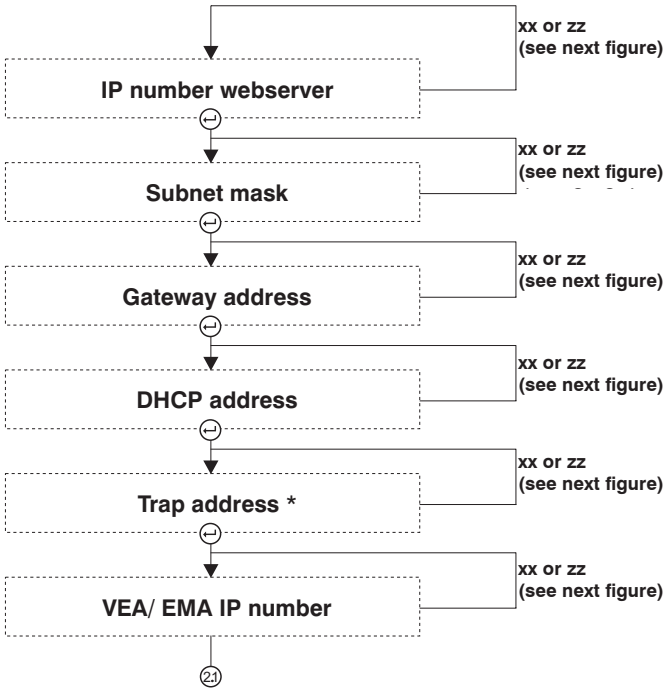
- 192.168.2.80

10.3 Subroutine “Change configuration”



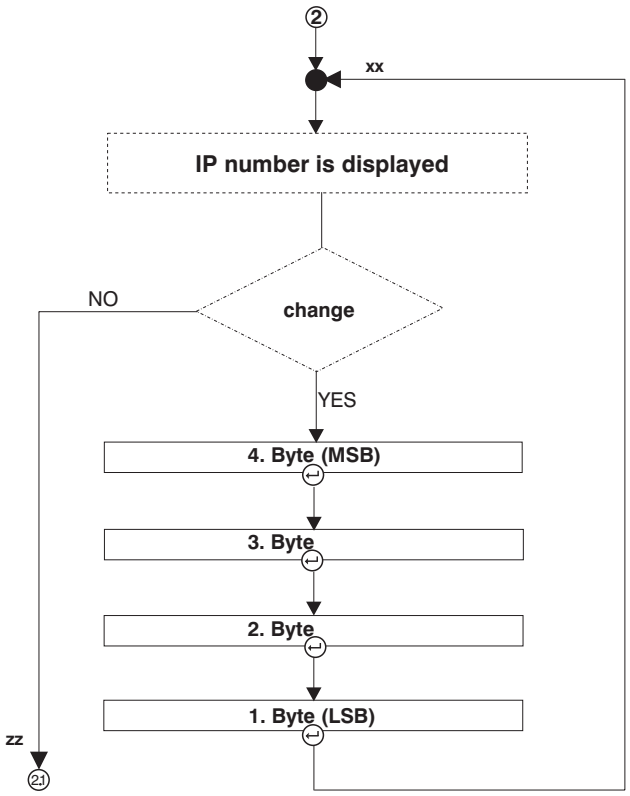
10.4 Adjusting of the IP number

Adjusting facilities of IP numbers



* Software option 9650.50

Subroutine "Change IP number"



11. Bibliography

[1] EN 60728-11: Cable networks for television signals, sound signals and interactive services Part 11: Safety (IEC 60728-11:2005); German version EN 60728-11:2005

[2] EN 50083-2 : Cabled distribution systems for television and sound signals. Electromagnetic compatibility for equipment; EN 50083-2:2001

[3] EN 60320-1: Appliance couplers for household and similar general purposes Part 1: General requirements (IEC 60320-1:2001 + A1:2007); German version EN 60320-1:2001 + A1:2007

[4] DIN VDE 0860: Audio, video and similar electronic apparatus, Safety requirements (IEC 60065:2001, modified + A1:2005, modified); German version EN 60065:2002 + A1:2006 + Cor.:2007 + A11:2008

[5] DIN VDE 0871: Radio noise suppression of high frequency units, Determination of limits for industrial, scientific and medical equipment, identical with CISPR 23 :1987

[6] EN 55022: Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement (IEC/CISPR 22:2005, modified + A1:2005); German version EN 55022:2006 + A1:2007

[7] EN 61000-4-2: Electromagnetic compatibility (EMC) - Testing and measurement techniques-Electrostatic discharge immunity test, 2009-05-31

EN 61000-4-3: Electromagnetic compatibility (EMC) - Part 4-3 : Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2006 + A1:2007); German version EN 61000-4-3:2006 + A1:2008

EN 61000-4-4: Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test (IEC 61000-4-4:2004); German version EN 61000-4-4:2004

EN 61000-4-6: Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields (IEC 61000-4-6:2003 + A1:2004 + A2:2006)

EN 61000-4-8: Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test (IEC 77A/694/FDIS:2009); German version FprEN 61000-4-8:2009

[8] ENV 50204: Radiated electromagnetic field from digital radio telephones - Immunity test, 1996-02-15

[9] EN 55011 : Industrial, scientific and medical equipment Radio-frequency disturbance characteristics – Limits and methods of measurement ; (IEC/CISPR 11:1997, modificated + A1:1999 + A2:2002); German Version EN 55011:1998 + A1:1999 + A2:2002

[10] EN 61000-6-1 : Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1:2005); German version EN 61000-6-1:2007

[11] EN 61000-6-2 : Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments (IEC 61000-6-2:2005); German version EN 61000-6-2:2005

12. Document history

Version	Date	Modification	Author
1.00	15.04.2009	basic document	Häußer, Rudolph
1.01	30.07.2009	revision	Häußer
1.02	15.12.2009	revision (program flow)	Häußer
1.03	11.01.2010	insert of HCB 300 (9653.01)	Häußer
1.04	19.01.2011	insert of HCB 300 (9653.02)	Häußer
1.05	22.06.2015	new company	Häußer

Options available upon request! Subjects to changes due to technical progress.

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CE Declaration of Conformity

Manufacturer:	BLANKOM systems GmbH Hermann – Petersilge – Straße 1 07422 Bad Blankenburg Germany
Product Name:	Headend Controller
Type Name:	HCB 200, HCB 300
Type N°:	9652.01, 9653.01, 9653.02

BLANKOM systems GmbH confirms that the mentioned products meet the guideline(s) of the Council for the approximation of legislation of the member states.

Electromagnetic compatibility (2004/ 108/ EC)
The following standards are met: DIN EN 50083-2: 2007-04 (EN 50083-2:2006-06)

Low voltage guideline (2006/ 95/ EC)
The following standards are met: DIN EN 60950-1: 2006-04 (EN 60950-1:2006-11)
Information technology equipment -Safety-

Restriction of hazardous substances (2011/ 65/ EC)
The following standards are met: DIN EN 50581: 2013-02 (EN 50581:2012)

Bad Blankenburg, Germany, 2015-06-22

Wolfgang Schlüter
(Managing Director)